US ECONOMICS ANALYST

What Is AI Investment Crowding Out?

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- We estimate that AI investment in the US will total almost $600bn in 2026, equivalent to nearly 2% of US GDP, and has amounted to over 10% of business fixed investment in recent quarters. The rapid growth of AI spending raises the question of whether it is crowding out other activity.
- The question is important because so much AI spending is on imported technology goods. In principle, if companies suddenly decided to spend their capex budgets on imported goods, and this displaced spending on domestic output, the net effect on US GDP could be negative. So far, though, we see only limited crowding-out in three key areas: 1) displacing other technology investment, 2) displacing other construction, and 3) raising borrowing costs for other businesses.
- The first channel of potential AI crowd-out is displacing other spending at the hyperscalers or at businesses buying AI services. The hyperscalers financed much of their increased AI investment by reducing buybacks over the last few years. While capex is now set to exceed cash flow, they have been willing to borrow and appear undeterred by high interest rates, which likely limits the pressure to cut other spending. Among businesses that consume AI services, our GS IT Spending Survey indicates that for most, AI costs remain modest, with about one third funded by incremental spending and about two thirds funded by cuts to other spending, much of which would be treated as an intermediate business service in the GDP statistics.
- The second channel of potential crowd-out is displacing other construction spending. Data center spending has risen rapidly since 2024 to 9% of private nonresidential construction. But this happened to coincide with an even larger decline in spending on manufacturing facilities subsidized by the Inflation Reduction Act and CHIPS Act that offset the demand for construction resources. While there is surely some local crowd-out, construction wage growth is not that elevated even in states with the most data centers being built, and we see only limited signs of crowd-out nationally. This could change, however, if data center spending meets projections.
- The third channel of potential crowd-out is upward pressure on interest rates from the surge in AI-related debt issuance, especially to fund data centers. While AI-related financing has grown to nearly a quarter of gross investment grade issuance, spillovers to borrowing rates for non-AI companies look limited so far,

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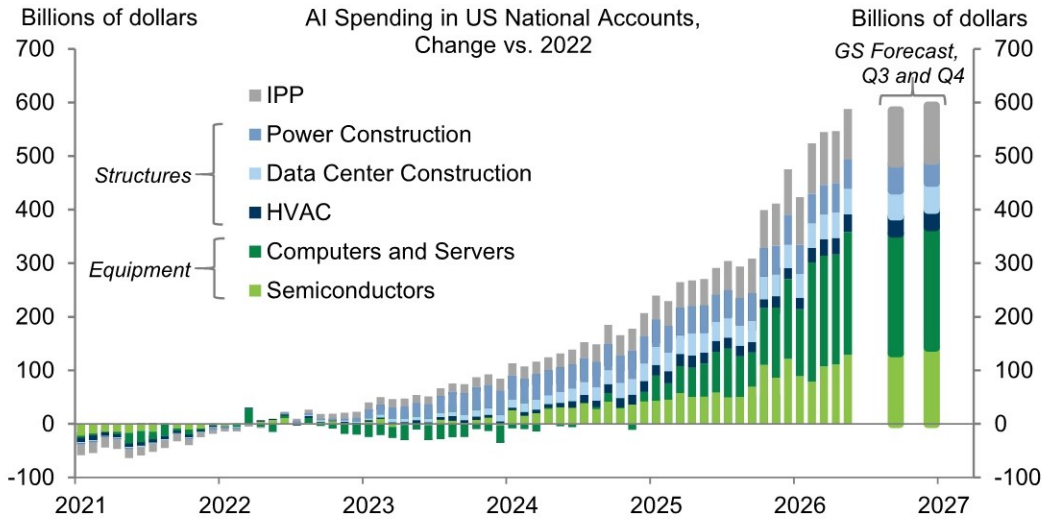
with credit spreads for non-AI companies near historical lows. Our rules of thumb imply that AI issuance over the last year should raise interest rates by about 5bp.

- Our analysis suggests that both AI's contribution to US GDP growth and its crowding out effects are smaller than often thought. We estimate that the direct effects of AI investment will boost *measured* GDP growth by just 0.1pp in 2026, largely because much of the equipment is imported and some of it is not counted in GDP, though adding back AI investment and exports that should be counted raises the *true* impact to a more impressive 0.3pp. We estimate that accounting for the indirect effects of AI—roughly $50bn of incremental crowding-out in 2026 from the three channels above, positive stock market wealth effects on consumer spending, and the hit to real income and consumer spending from higher electricity and other prices—would shave about 0.1pp off of the impact on 2026 GDP growth.

What Is AI Investment Crowding Out?

AI investment in the US has grown extremely rapidly over the last few years. As Exhibit 1 shows, we estimate that it will total almost $600bn in 2026, equivalent to nearly 2% of US GDP, though much of this consists of imports and not all of it is counted in GDP, as we will discuss below.

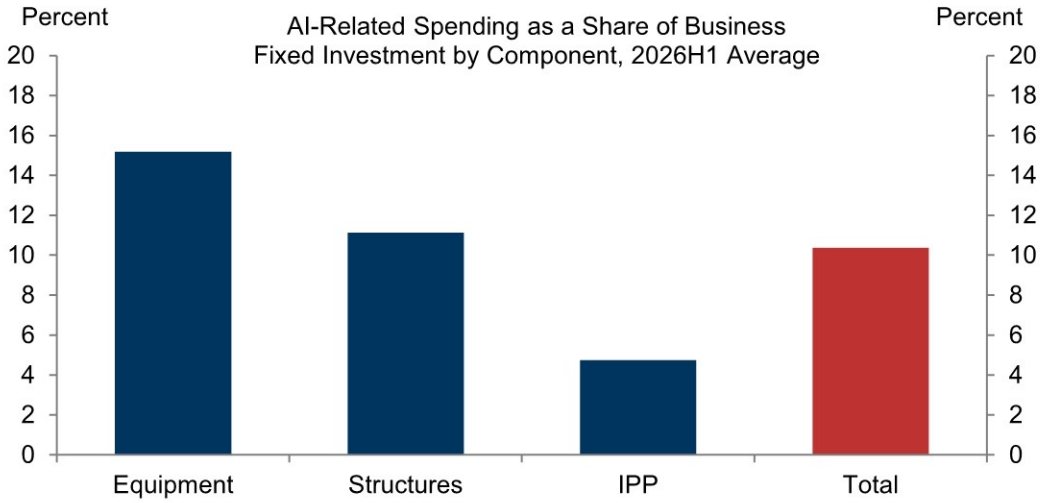
Exhibit 1: We Estimate That US AI Investment Will Total Almost $600bn in 2026



Source: Goldman Sachs Global Investment Research, Department of Commerce

Even more striking, Exhibit 2 shows that AI spending has amounted to over 10% of business fixed investment in recent quarters, and within that about 15% of equipment investment.

Exhibit 2: We Estimate That AI Spending Now Accounts for Over 10% of Total Business Fixed Investment and 15% of Equipment Investment, Though Not All of That Is Officially Counted as Investment



Note: We divide our estimates of total AI-related spending on each component by the sum of total investment in each component reported in the GDP statistics plus unmeasured AI spending.

Source: Goldman Sachs Global Investment Research

The impressive scale of AI spending raises the question of whether it is crowding out other economic activity. The question is particularly important because so much AI spending is on imported technology goods. In principle, if US companies suddenly decided to spend their capex budgets on imported capital goods, and this displaced spending on domestic output, the net effect on US GDP could be negative.

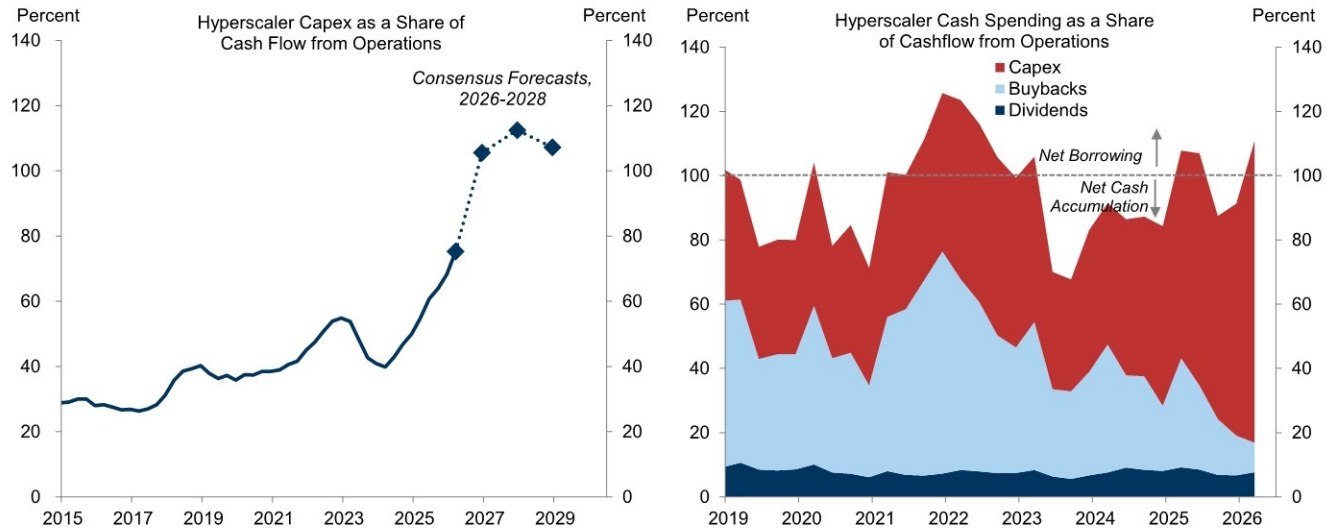
We look for signs of crowding-out in three key areas: 1) displacing other technology investment, 2) displacing other construction, and 3) raising borrowing costs for other businesses.

Crowd-out Channel #1: Displacing Other Tech Investment

The first channel of potential AI crowd-out is displacing other spending at the hyperscalers or at businesses buying AI services.

The hyperscalers financed much of their increased AI investment by reducing buybacks over the last few years. While capex is now set to exceed cash flow, our sector analysts note that they have been willing to borrow and appear undeterred by high interest rates, which likely limits the pressure to cut other spending.

Exhibit 3: Hyperscalers Were Able to Finance Much of Their AI Investment by Reducing Buybacks Until Recently, and Now Seem Undeterred by High Interest Rates from Borrowing to Finance Additional Capex

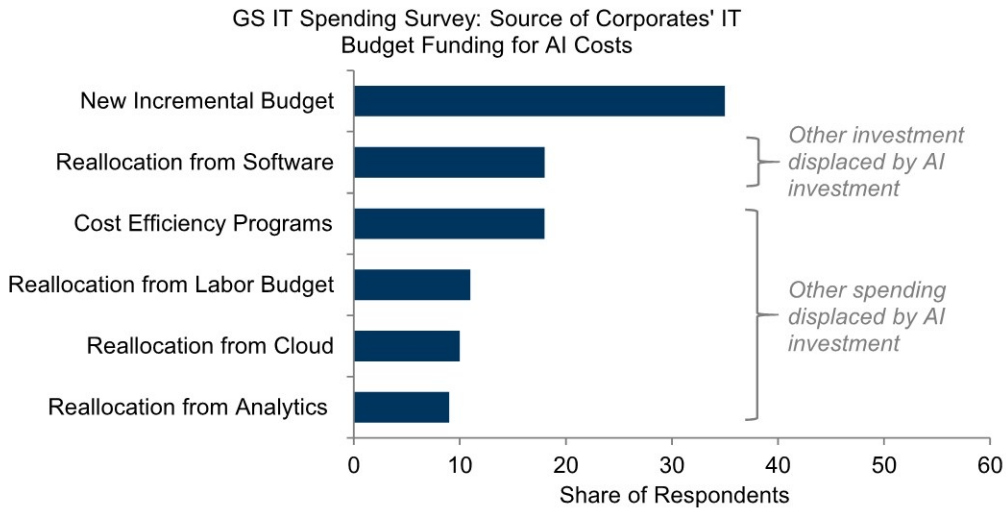


Source: Goldman Sachs Global Investment Research, Compustat

Among businesses that consume AI services, our equity analysts' latest GS IT Spending Survey indicates that AI inference costs remain modest for most, with 89% of respondents reporting that they amounted to just 1-5% of their IT budgets and another 10% reporting that they account for 5-10%. Exhibit 4 shows that companies have covered one third of these costs with incremental spending and two thirds with cuts to other spending. Only a small portion of that displaced spending, the spending on software, would count as investment and final expenditure. Aside from that part, this is largely a matter of swapping one intermediate business service for another, with little net impact on the GDP statistics.

We estimate the total crowding-out of other output that would be counted as GDP from this first channel in two steps. First, we assume that one-quarter of hyperscaler capex in 2022, before AI spending took off, was eventually displaced, and that half of the displacement or around $20bn occurred over the last year, following the time pattern of the ramp-up in AI spending. Second, we estimate that spending on AI services will increase by about $60bn this year based on revenue estimates from the companies with the most popular AI models, and that roughly 20% of this spending displaced other activity that counts as final expenditure, based on the "reallocation from software" share in Exhibit 4. Taken together, this suggests about $30bn of incremental crowd-out in 2026. We use this figure later to estimate the broader impact of AI spending on GDP growth, including both direct and indirect effects.

Exhibit 4: Companies Responding to Our GS IT Spending Survey Fund About 1/3 of AI Costs Through Incremental Spending and 2/3 Through Cuts to Other Spending, Though AI Costs Are Modest for Most

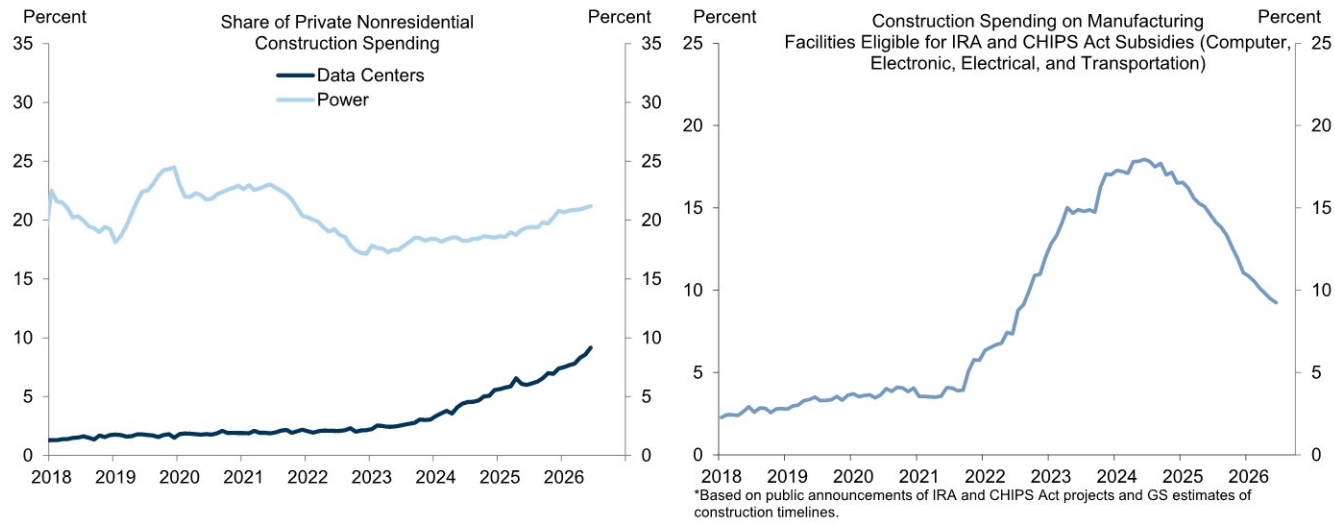


Source: Goldman Sachs Global Investment Research

Crowd-out Channel #2: Displacing Other Construction

The second channel of potential crowd-out is displacing other construction spending. Data center spending has risen rapidly since 2024 to 9% of private nonresidential construction. But this happened to coincide with a slightly larger decline in spending on manufacturing facilities subsidized by the Inflation Reduction Act and CHIPS Act, helping to offset the demand for construction resources so far. It has also coincided with subdued homebuilding at a time when affordability has increasingly constrained demand.

Exhibit 5: Data Center Spending Has Risen Rapidly to 9% of Private Nonresidential Construction Spending Since 2024, But This Happened to Coincide with an Even Larger Decline in Spending on Manufacturing Facilities Subsidized by the IRA and CHIPS Act, Helping to Offset the Demand for Construction Resources

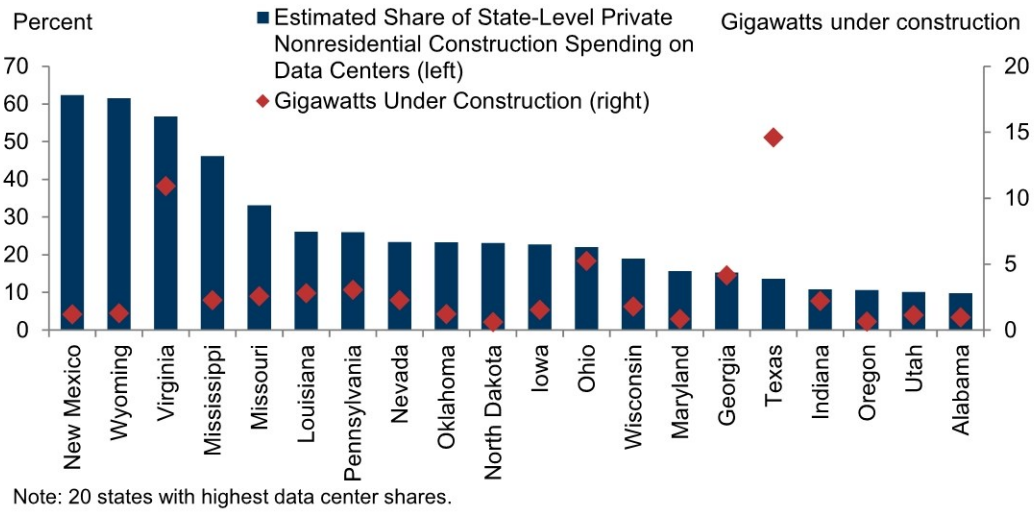


Source: Goldman Sachs Global Investment Research, Department of Commerce

There is surely some local crowd-out in areas where data centers are being built. We

estimate that in a handful of states, data center construction now accounts for roughly half or more of total nonresidential construction spending, as Exhibit 6 shows. Our engineering and construction equity analysts have shown that gross margins on data center construction are more than twice as high as margins on non-technology projects, which has resulted in data centers pulling resources away from other projects.

Exhibit 6: Data Centers Are Surely Crowding Out Other Construction in Some Local Areas, Especially in the States Where We Estimate They Account for Half or More of Total Nonresidential Construction Spending

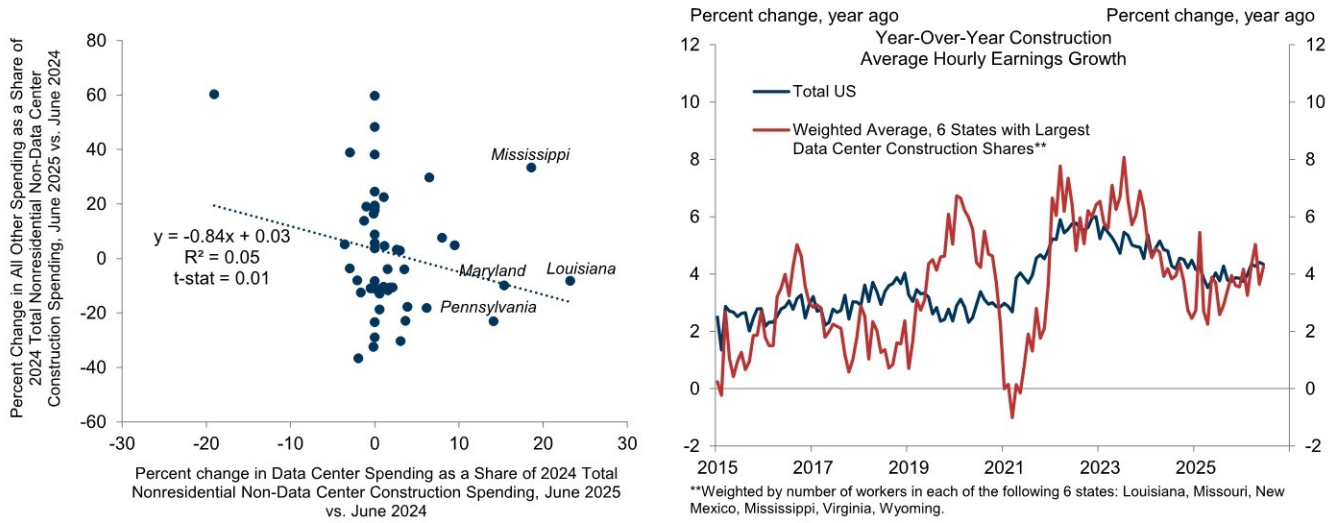


Source: Goldman Sachs Global Investment Research

But on a national basis, we see at most limited signs of crowding out other construction. The left side of Exhibit 7 shows that the statistical evidence of a negative relationship between recent changes in AI construction and other nonresidential private construction is very weak. Our homebuilder and building products analysts likewise have seen few reports of notable shortages of building materials related to the growth in data centers. The right side of Exhibit 7 also shows that wage growth for construction workers is not particularly elevated in the states with the most data centers being built and has run only 1pp higher over the last year in the construction industry overall compared to the economywide average rate, though wage growth has been higher for electricians and construction workers at commercial building and power plant sites.

While the evidence above is ambiguous, we assume that one quarter of the roughly $45bn increase in AI-related construction over the last year crowded out other construction activity, worth just over $10bn.

Exhibit 7: But We See Limited Evidence Nationally of Crowd-Out of Other Nonresidential Construction, and Even in the States with the Most Data Centers Being Built, Construction Wage Growth Is Not Elevated



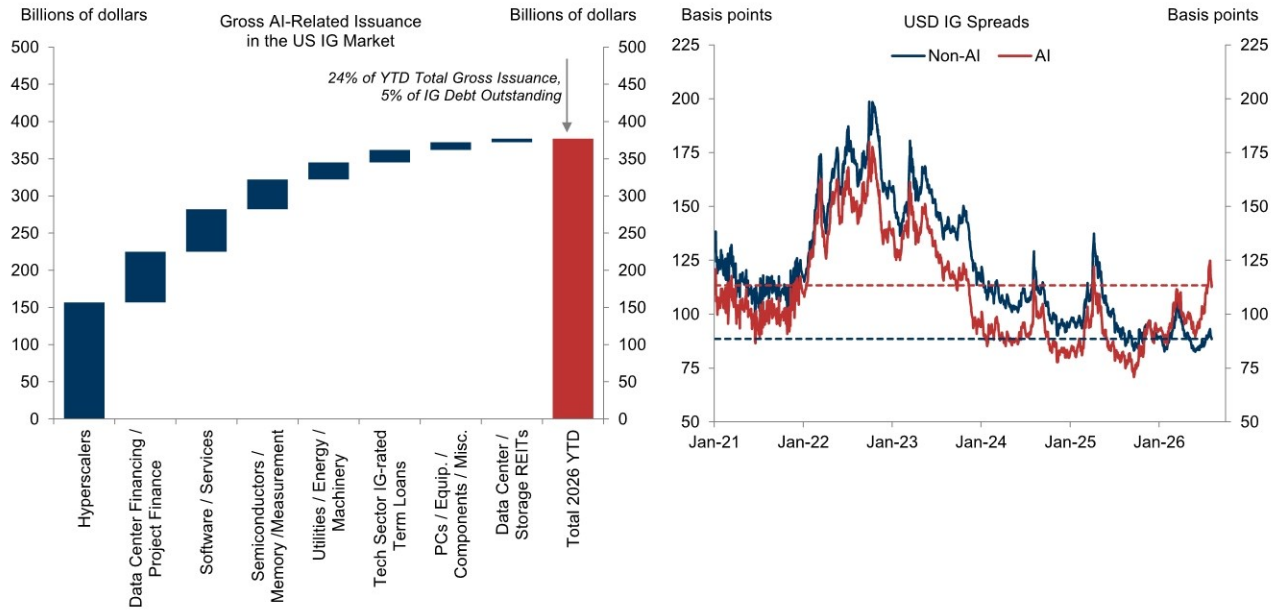
Source: Goldman Sachs Global Investment Research, Department of Commerce, Department of Labor

Data center construction could begin to crowd out other construction activity more meaningfully in the future if data center spending meets projections, especially at a horizon a year or two down the road where spending on manufacturing facilities that benefitted from subsidies has already normalized.

Crowd-out Channel #3: Upward Pressure on Interest Rates from Data Center Debt Issuance

The third channel of potential crowd-out is upward pressure on interest rates from the surge in AI-related debt issuance, especially to fund data centers. While AI-related financing has grown to nearly a quarter of gross investment grade issuance, spillovers to borrowing rates for non-AI companies look limited so far, with credit spreads for non-AI companies near historical lows.

Exhibit 8: While AI-Related Financing Has Grown to Nearly a Quarter of Gross Investment Grade Issuance, Spillovers to Borrowing Rates for Non-AI Companies Look Limited, with Credit Spreads Near Historical Lows



Source: Goldman Sachs Global Investment Research, iBoxx, Dealogic

For a rough sense of the impact of AI-related issuance on borrowing rates for other companies, we adapt the rules of thumb that we and other researchers derived for estimating the effects of QT on interest rates, since QT can also be thought of as putting more duration into the market. We start with our QT estimate that putting 1% of GDP worth of UST and MBS back into the market raises 10yr bond yields by about 2bp, then we scale it up by half to 3bp because corporate debt also has a credit risk component. Multiplying this by our estimate of AI-related issuance over the last year implies a roughly 5bp impact on borrowing rates, which we estimate would reduce investment by about $10bn by raising the user cost of capital.

Adding up the Direct and Indirect Effects of AI on the Economy

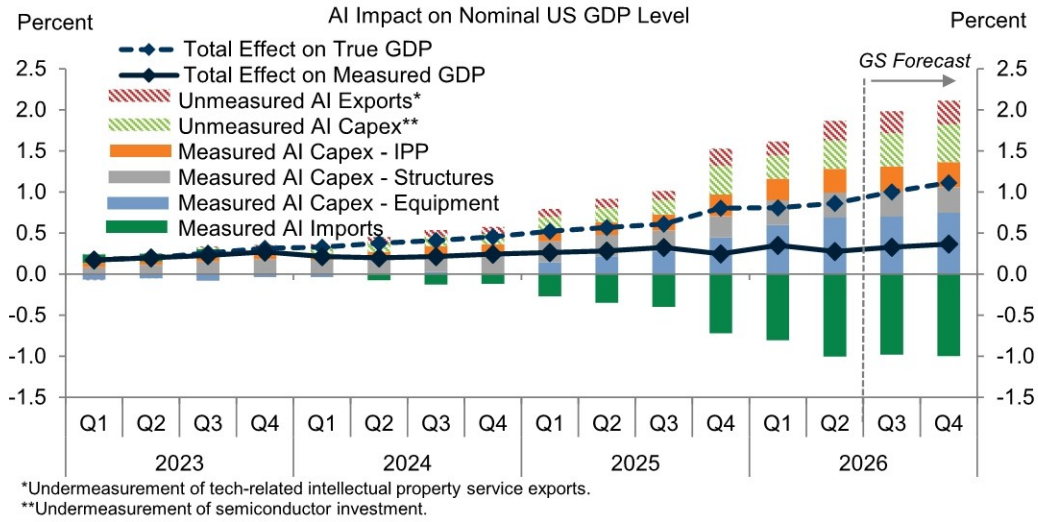
To summarize the answer to our original question, we estimate that AI spending crowded out roughly an incremental $50bn of other spending over last year through the three channels above, counting only spending that would be treated as final expenditure in the GDP statistics. Crowding-out effects from AI spending appear moderate so far because so much of it has consisted of purchases by hyperscalers that had plenty of extra cash flow, because companies have replaced spending on other intermediate business services with spending on AI services, and because the data center boom has so far happened to coincide with a similar-sized decline in manufacturing facility construction as subsidies faded.

While media reports and market commentary often claim that AI is making a very large contribution to US GDP growth but also crowding out a great deal of other activity, our analysis in prior work and above suggests that both claims are exaggerated.

Exhibit 9 summarizes our approach to estimating the direct effects of AI investment on GDP. We cast a wide net and include, for example, new investment in electrical power infrastructure to support data centers. Our analysis suggests that the officially measured direct effects amount to about 0.5% of GDP, well below the 2% of GDP

represented by total AI spending because much of this spending is on imported goods and some AI investment is classified as an intermediate input rather than final expenditure in the GDP statistics, as we previously explained.

Exhibit 9: We Estimate That Spending on AI Now Totals 2% of GDP, but Some Spending Is on Imported Goods and Some Is Not Captured in the GDP Statistics, Resulting in a 0.5% Net Impact on Measured GDP

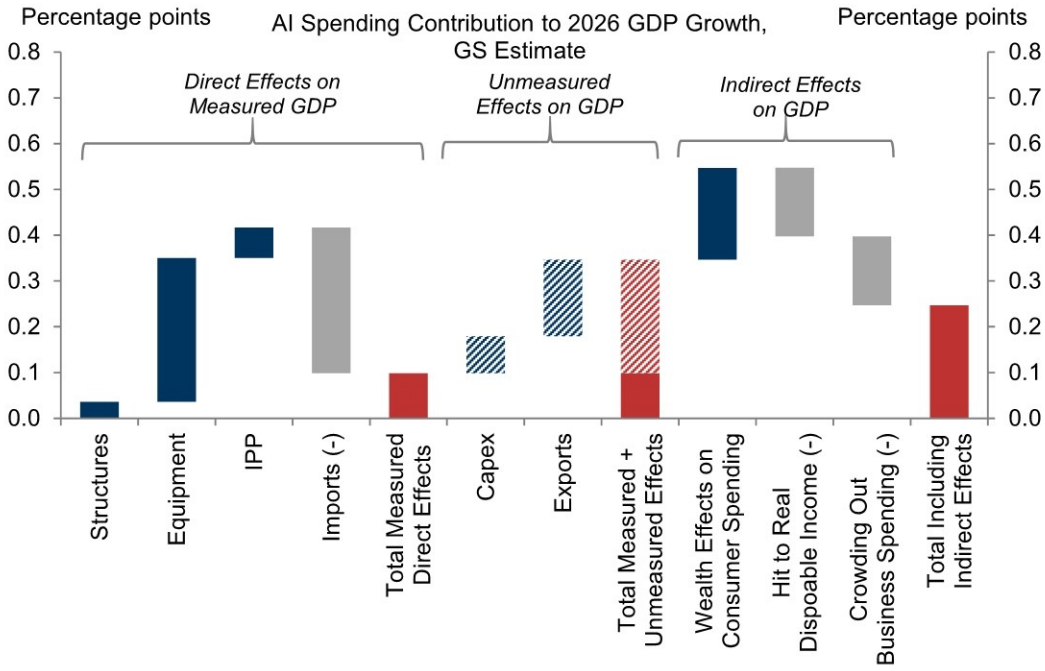


Source: Goldman Sachs Global Investment Research

The first group of bars in Exhibit 10 shows that our estimates in Exhibit 9 imply that the direct effects of AI investment will boost the growth rate of GDP by 0.1pp this year. As we have noted in the past, the impact on *true* rather than *measured* GDP growth is a more impressive 0.3pp, once we add back in investment in semiconductors used to train AI models that are misclassified as intermediate inputs as well as exports of chip design services to foreign manufacturers that appear not to be fully captured in the GDP statistics, shown by the second group of bars in Exhibit 10.

We can also further widen the lens to include several indirect effects, drawing on our prior work and our findings above. The third group of bars in Exhibit 10 shows the boost to consumer spending from stock market wealth effects attributable to AI companies; the hit to household real income and consumer spending from higher electricity and other prices caused by spillover effects from AI demand; and our rough estimate of the crowding out effects on business spending discussed above. Our estimates imply that accounting for these indirect effects would shave about 0.1pp off of the impact on 2026 GDP growth.

Exhibit 10: We Estimate That the Direct Impact of AI on Measured GDP Growth Over the Last Year Was Just 0.1pp Because Much of the Equipment Is Imported and Some of It Is Not Counted in GDP; the Impact Still Looks Modest After Accounting for Indirect Effects Like Wealth Effects and Crowding Out



Source: Goldman Sachs Global Investment Research

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The US Economic and Financial Outlook

THE US ECONOMIC AND FINANCIAL OUTLOOK

(% change on previous period, annualized, except where noted)

	2023	2024	2025	2026	2027	2025 Q4	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4
OUTPUT AND SPENDING														
Real GDP	**2.9**	**2.8**	**2.1**	*2.1*	*2.3*	**0.5**	**2.1**	**1.5**	*2.7*	*2.2*	*2.2*	*2.3*	*2.3*	*2.3*
Real GDP (annual=Q4/Q4, quarterly=yoy)	**3.4**	**2.4**	**2.0**	*2.1*	*2.3*	**2.0**	**2.7**	**2.1**	*1.7*	*2.1*	*2.1*	*2.3*	*2.2*	*2.3*
Consumer Expenditures	**2.6**	**2.9**	**2.6**	*2.0*	*1.9*	**1.9**	**0.5**	**3.2**	*1.6*	*1.5*	*1.9*	*2.0*	*2.1*	*2.2*
Residential Fixed Investment	**-7.8**	**3.2**	**-2.2**	*-3.5*	*1.3*	**-1.7**	**-7.8**	**1.5**	*-2.5*	*1.5*	*2.0*	*2.0*	*2.0*	*2.3*
Business Fixed Investment	**7.3**	**2.9**	**4.1**	*6.9*	*5.9*	**2.4**	**10.6**	**8.4**	*8.1*	*6.9*	*4.9*	*4.9*	*4.9*	*4.9*
Structures	**16.7**	**1.1**	**-5.3**	*-4.0*	*2.3*	**-6.6**	**-4.7**	**-5.0**	*4.0*	*-0.2*	*3.5*	*3.5*	*3.5*	*3.5*
Equipment	**2.9**	**3.5**	**8.3**	*10.6*	*7.0*	**4.3**	**15.8**	**15.2**	*10.2*	*9.5*	*5.0*	*5.0*	*5.0*	*5.0*
Intellectual Property Products	**6.2**	**3.5**	**5.6**	*9.2*	*6.4*	**5.4**	**13.8**	**8.8**	*8.0*	*7.8*	*5.5*	*5.5*	*5.5*	*5.5*
Federal Government	**3.3**	**3.8**	**-1.2**	*-2.1*	*0.3*	**-16.7**	**9.4**	**-4.1**	*-2.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
State & Local Government	**3.6**	**3.8**	**2.5**	*1.5*	*1.0*	**1.5**	**1.6**	**1.1**	*0.7*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
Net Exports ($bn, '17)	**-925**	**-1,033**	**-1,091**	*-1,078*	*-1,167*	**-969**	**-1,002**	**-1,075**	*-1,107*	*-1,128*	*-1,144*	*-1,159*	*-1,175*	*-1,190*
Inventory Investment ($bn, '17)	**47**	**44**	**29**	*-5*	*54*	**-16**	**-17**	**-51**	*17*	*30*	*40*	*50*	*60*	*65*
Nominal GDP	**6.7**	**5.3**	**5.0**	*6.0*	*4.9*	**4.2**	**5.8**	**7.9**	*4.7*	*4.4*	*4.9*	*4.8*	*4.7*	*4.5*
Industrial Production, Mfg.	**-1.0**	**-1.0**	**0.8**	*1.8*	*3.8*	**-3.5**	**1.4**	**4.8**	*4.6*	*4.1*	*3.5*	*3.4*	*3.4*	*3.4*
HOUSING MARKET														
Housing Starts (units, thous)	**1,421**	**1,370**	**1,356**	*1,347*	*1,372*	**1,323**	**1,418**	**1,299**	*1,323*	*1,348*	*1,362*	*1,365*	*1,375*	*1,385*
New Home Sales (units, thous)	**666**	**684**	**679**	*630*	*649*	**711**	**622**	**590**	*649*	*661*	*636*	*642*	*649*	*670*
Existing Home Sales (units, thous)	**4,103**	**4,067**	**4,076**	*4,168*	*4,255*	**4,157**	**4,053**	**4,160**	*4,226*	*4,234*	*4,243*	*4,251*	*4,260*	*4,268*
Case-Shiller Home Prices (%yoy)*	**5.3**	**3.8**	**1.3**	*1.1*	*2.4*	**1.3**	**0.8**	**1.1**	*1.6*	*1.1*	*1.1*	*2.0*	*2.2*	*2.4*
INFLATION (% ch, yr/yr)														
Consumer Price Index (CPI)**	**3.3**	**2.9**	**2.7**	*3.1*	*1.9*	**2.7**	**2.7**	**3.8**	*3.4*	*3.1*	*2.8*	*1.8*	*1.9*	*2.0*
Core CPI **	**3.9**	**3.2**	**2.6**	*2.3*	*1.9*	**2.7**	**2.5**	**2.7**	*2.3*	*2.3*	*2.1*	*1.8*	*1.8*	*1.9*
Core PCE** †	**3.1**	**3.0**	**3.0**	*3.0*	*2.2*	**2.9**	**3.1**	**3.3**	*3.2*	*3.1*	*2.6*	*2.3*	*2.3*	*2.2*
LABOR MARKET														
Unemployment Rate (%)^	**3.8**	**4.1**	**4.4**	*4.2*	*4.1*	**4.4**	**4.3**	**4.2**	*4.1*	*4.2*	*4.2*	*4.1*	*4.1*	*4.1*
U6 Underemployment Rate (%)^	**7.2**	**7.6**	**8.4**	*7.9*	*7.8*	**8.4**	**8.0**	**7.9**	*7.8*	*7.9*	*7.9*	*7.8*	*7.8*	*7.8*
Payrolls (thous, monthly rate)	**210**	**122**	**10**	*59*	*50*	**-39**	**73**	**77**	*40*	*45*	*50*	*50*	*50*	*50*
Employment-Population Ratio (%)^	**60.1**	**59.9**	**59.7**	*58.8*	*58.7*	**59.7**	**59.2**	**59.0**	*58.9*	*58.8*	*58.8*	*58.8*	*58.8*	*58.7*
Labor Force Participation Rate (%)^	**62.5**	**62.5**	**62.4**	*61.4*	*61.3*	**62.4**	**61.9**	**61.5**	*61.4*	*61.4*	*61.3*	*61.3*	*61.3*	*61.3*
Average Hourly Earnings (%yoy)	**4.4**	**3.9**	**4.0**	*3.9*	*3.8*	**4.0**	**4.0**	**4.0**	*3.9*	*3.8*	*3.8*	*3.8*	*3.8*	*3.8*
GOVERNMENT FINANCE														
Federal Budget (FY, $bn)	**-1,694**	**-1,833**	**-1,775**	*-2,100*	*-2,100*	--	--	--	--	--	--	--	--	--
FINANCIAL INDICATORS														
FF Target Range (Bottom-Top, %)^	**5.25-5.5**	**4.25-4.5**	**3.5-3.75**	*3.5-3.75*	*3-3.25*	**3.5-3.75**	**3.5-3.75**	**3.5-3.75**	*3.5-3.75*	*3.5-3.75*	*3.5-3.75*	*3.25-3.5*	*3.25-3.5*	*3-3.25*
10-Year Treasury Note^	**3.88**	**4.58**	**4.18**	*4.40*	*4.25*	**4.18**	**4.30**	**4.44**	*4.45*	*4.40*	*4.35*	*4.30*	*4.25*	*4.25*
Euro (€/$)^	**1.11**	**1.04**	**1.17**	*1.12*	*1.14*	**1.17**	**1.15**	**1.14**	*1.14*	*1.12*	*1.12*	*1.12*	*1.13*	*1.14*
Yen ($/¥)^	**141**	**157**	**157**	*164*	*145*	**157**	**159**	**163**	*162*	*164*	*164*	*165*	*157*	*145*

* Weighted average of metro-level HPIs for 381 metro cities where the weights are dollar values of housing stock reported in the American Community Survey. Annual numbers are Q4/Q4.
** Annual inflation numbers are December year-on-year values. Quarterly values are Q4/Q4.
† PCE = Personal consumption expenditures. ^ Denotes end of period.
Note: Published figures in bold.

Source: Goldman Sachs Global Investment Research

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Disclosure Appendix

Reg AC

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